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150mA Supercapacitor Charger with PowerPath Control & Auto Cell Balancing in 9mm²

MILPITAS, CA – July 26, 2011 – Linear Technology Corporation introduces the [LTC3226](#), an inductorless supercapacitor charger with backup PowerPath™ controller for Li-ion or other low-voltage system rails in applications that require short term backup power. The device employs a low-noise dual mode (1x/2x) charge-pump architecture with constant input current to charge two supercapacitors in series from a 2.5V to 5.5V input supply to a programmable capacitor charge voltage between 2.5V and 5.3V. Charge current is resistor-programmable up to 150mA. The device's automatic cell balancing and voltage clamping features maintain equal voltages on both cells without requiring balancing resistors. This protects each supercapacitor from overvoltage damage that could otherwise be caused by mismatches in cell capacitance or leakage, while minimizing current drain on the capacitors.

The LTC3226 has two modes of operation: normal and backup. Operating mode is determined by a programmable power fail (PFI) comparator. In normal mode (PFI high), power flows from V_{IN} to V_{OUT} through a low loss external FET ideal diode, and the charge pump stays on to top off the supercapacitor stack. In backup mode (PFI low), the charge pump is turned off and the internal LDO is turned on to supply the V_{OUT} load current from the stored supercapacitor charge while the external ideal diode prevents reverse current flow into V_{IN} . Up to 2A of backup current may be provided from the supercapacitor through the internal LDO.

The LTC3226 operates with a very low 55μA quiescent current when the output voltage is in regulation. The basic charging circuit requires few external components and takes up little space; the IC is offered in a tiny 3mm x 3mm QFN package. The device's high 900kHz operating frequency reduces the size of external components. Internal current limit and thermal shutdown circuitry allow the device to survive a continuous short-circuit from the PROG, V_{OUT} or CPO pins to ground. Other features include CAP PGOOD and V_{IN} PFO\ (power fail) outputs as well as a V_{OUT} RST\ output for system housekeeping.

The LTC3226 is housed in a compact 16-lead, low-profile (0.75mm) 3mm x 3mm QFN package, with operation from -40°C to 125°C. Pricing for the E and I grade devices starts at \$2.67 and \$3.07 each, respectively, in 1,000-piece quantities. For more information, visit www.linear.com/product/LTC3226


Photo Caption: 150mA Supercap Charger with PowerPath™ Control & Auto Cell Balancing

Summary of Features: LTC3226

- 1x/2x Multimode Low Noise Charge Pump Supercapacitor Charger
- Automatic Cell Balancing Prevents Capacitor Overvoltage During Charging
- Ideal Diode Main PowerPath Controller (V_{IN} to V_{OUT})
- Internal 2A LDO Backup Supply (CPO to V_{OUT})
- Automatic Main/Backup Switchover
- Input Voltage Range: 2.5V to 5.5V
- Programmable SCAP Charging Voltage
- Programmable SCAP Input Current Limit (315mA max)
- No Load $I_{VIN} = 55\mu A$
- Compact, Low-Profile (0.75mm) 3mm × 3mm 16-Lead QFN Package

About Linear Technology

Linear Technology Corporation, a member of the S&P 500, has been designing, manufacturing and marketing a broad line of high performance analog integrated circuits for major companies worldwide for three decades. The Company's products provide an essential bridge between our analog world and the digital electronics in communications, networking, industrial, automotive, computer, medical, instrumentation, consumer, and military and aerospace systems. Linear Technology produces power management, data conversion, signal conditioning, RF and interface ICs, and μ Module® subsystems.

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